Claims 1-66 (cancelled).

- 67. (new) A method for producing a polypeptide product which is substantially free of a specific undesired protein that hinders the use of the polypeptide product, wherein the undesired protein has activity that is essential for survival of a host cell or for a viable production process using a host cell, the method comprising
- (a) identifying a mutant form of said polypeptide product which has increased tolerance to a particular reaction condition selected from pH or temperature, than a corresponding wild-type polypeptide product,
- (b) identifying a mutant form of said undesired protein which has decreased tolerance to said reaction condition than a wild-type form of said undesired protein, and is denatured under conditions at which the mutant form of the polypeptide product identified in step (a) is stable,
- (c) transforming a host cell so that it expresses the mutant form of the polypeptide product identified in step (a),
- (d) further transforming the host cell so that it expresses the undesired protein only in the mutant form identified in step (b).
- (e) culturing said host cell and recovering the desired product, wherein either the host cell culture or the recovered product is subjected for a sufficient period of time to conditions at which the undesired protein is denatured but the polypeptide product remains unaffected.

- 68. (new) A method for producing a polypeptide product which is substantially free of a specific undesired protein that hinders the use of the polypeptide product, wherein the undesired protein has activity that is essential for survival of a host cell or for a viable production process using a host cell, the method comprising
- (a) identifying a mutant form of said polypeptide product which has increased thermostability than a corresponding wild-type polypeptide product.
- (b) identifying a mutant form of said undesired protein which has decreased thermostability than a wild-type form of said undesired protein, and is denatured under conditions at which the mutant form of the polypeptide product identified in step (a) is stable.
- (c) transforming a host cell so that it expresses the mutant form of the polypeptide product identified in step (a).
- (d) further transforming the host cell so that it expresses the undesired protein only in the mutant form identified in step (b),
- (e) culturing said host cell and recovering the desired product, wherein either the host cell culture or the recovered product is subjected for a sufficient period of time to a temperature at which the undesired protein is denatured but the polypeptide product remains unaffected.

- 69. (new) A method according to claim 67 or claim 68 wherein the step (a) is carried out by mutating colonies of host cells using non-specific methods, differentially screening colonies that are able to grow at 25°C but not able to grow at 37°C, and screening these colonies for activity of the specific undesired protein at various temperatures.
- 70. (new) A method according to claim 67 or claim 68 wherein in step (d) a host cell is transformed so that chromosomal genes expressing the said undesired protein are inactivated, and a gene which expresses the mutant form of the protein identified in step (b) is introduced into the host cell on a plasmid.
- 71. (new) A method according to claim 68 wherein the temperature used in step (e) is 37°C.
- 72. (new) A method according to claim 67 or claim 68 wherein the polypeptide product is a luciferase, and the specific undesired protein is adenylate kinase.
- 73. (new) A method for producing a polypeptide product which is substantially free of a specific undesired cellular protein that hinders the use of the polypeptide product, wherein the undesired protein has activity that is essential for survival of a host cell or for a viable production process using the host cell, the method comprising

culturing a host cell which has been transformed so that it expresses said polypeptide product and further transformed so that it expresses said undesired protein only in a mutant form which form has the said activity of the corresponding native protein under culture conditions but is denatured—under conditions at which the said polypeptide product remains unaffected; and recovering the desired product, wherein either the host cell culture or the recovered product is subjected for a sufficient period of time to conditions under which the undesired protein is denatured—but the polypeptide product remains unaffected.

- 74. (new) A method according to claim 73 wherein the host cells are cultured for a period which is sufficient to allow production of polypeptide product, and then a batch of said culture is subjected to the said conditions under which the undesired protein is denatured, and the polypeptide product is recovered from the said batch.
- 75. (new) A method according to claim 73 wherein the conditions at which the undesired protein is denatured and the polypeptide product remains unaffected are a predetermined temperature or pH conditions.
- 76. (new) A method according to claim 75 wherein the conditions at which the undesired protein is denatured and the polypeptide product remains unaffected are a predetermined temperature.

77. (new) A method according to claim 76 wherein the predetermined temperature is  $37^{\circ}$ C.

78. (new) A method according to claim 77 wherein the host cell or the recovered product is subjected to a temperature of from 37°C, up to the temperature at which the desired polypeptide product is denatured.

79. (new) A method according to claim 73 wherein the conditions at which the undesired protein is denatured and the polypeptide product remains unaffected are pH conditions.

80. (new) A method according to claim 73 wherein the desired polypeptide product is luciferase and the undesired protein is adenylate kinase.

81. (new) A method according to claim 80 wherein the adenylate kinase is thermolabile at a temperature of 37°C.

82. (new) A method according to claim 81 wherein the adenylate kinase includes mutations at amino acids 87 or 107 in the sequence of E. coli adenylate kinase.

- 83. (new) A recombinant cell which has been transformed so that it expresses a first nucleotide sequence which encodes a desired polypeptide under the control of regulatory elements which allow expression of said polypeptide, and is further transformed so that it expresses a specific protein which is undesirable as a contaminant in preparations of said polypeptide product but wherein the undesired protein has activity that is essential for survival of a host cell or for a viable production process using the host cell, only in mutated form such that the protein expressed is denatured under conditions in which the polypeptide product remains unaffected.
- 84. (new) A recombinant cell according to claim 83 wherein the said desired polypeptide comprises a luciferase and the said undesired protein comprises adenylate kinase.
- 85. (new) A recombinant cell according to claim 83 which further comprises at least one selection marker.
- 86. (new) A recombinant cell according to claim 83, which comprises a prokaryotic cell.
- 87. (new) A recombinant cell according to claim 83 which comprises a recombinant E. coli cell.

88. (new) A method for producing a recombinant cell according to claim 83 which method comprises in any order (a) transforming a host cell with a vector which encodes said undesired protein in a form which is denatured under given conditions, subjecting transformants to said conditions and detecting those in which protein product is denatured, and (b) transforming said host cell with a vector which encodes a desired polypeptide which is unaffected under said conditions and a first selection marker, and using the first selection marker to detect stable transformants.

- 89. (new) A method according to claim 88 wherein the vector which encodes said undesired protein in a form which is denatured under given conditions further comprises a second selection marker which is different to said first selection marker, and stable transformants are selected.
- 90. (new) A method according to claim 89 wherein said selection markers comprise particular different antibiotic resistance genes.
- 91. (new) A method for producing a polypeptide product which is substantially free of a specific undesired protein that hinders the activity of the polypeptide product, wherein the undesired protein has activity that is essential for survival of a host cell or for a viable production process using the host cell, the method comprising culturing a host

cell which has been transformed so that it expresses said polypeptide product and further transformed so that it expresses said undesired protein only in a mutant form which form has the said activity of the corresponding native protein under culture conditions but is denatured at temperatures at which the said polypeptide product remains unaffected; and

recovering the desired product, wherein either the host cell culture or the recovered product is subjected for a sufficient period of time to a temperature at which the undesired protein is denatured but the polypeptide product remains unaffected.

- 92. (new) A method according to claim 91 wherein the host cells are cultured for a period which is sufficient to allow production of polypeptide product, and then a batch of said culture is subjected to said conditions of temperature under which the undesired protein is denatured, and the polypeptide product is recovered.
  - 93. (new) A method according to claim 91 wherein the temperature is 37°C.
- 94. (new) A method according to claim 91 wherein the host cell or the recovered product is subjected to a temperature of from 37°C, up to the temperature at which the desired polypeptide product is denatured.
- 95. (new) A method according to claim 91 wherein the desired polypeptide product is luciferase and the undesired protein is adenylate kinase.

96. (new) A method according to claim 95 wherein the adenylate kinase is thermolabile at a temperature of 37°C.

97. (new) A method according to claim 96 wherein the adenylate kinase includes mutations at amino acids 87 or 107 in the sequence of E. coli adenylate kinase.

98. (new) A recombinant cell which has been transformed so that it expresses a first nucleotide sequence that encodes a desired polypeptide under the control of regulatory elements which allow expression of said polypeptide, and is further transformed so that it expresses a specific undesired protein that hinders the use of the polypeptide product but has activity that is essential for survival of a host cell or for a viable production process using the host cell, only in mutated form such that the protein expressed is denatured at a temperature at which the polypeptide product remains unaffected.

99. (new) A recombinant cell according to claim 98 wherein the said desired polypeptide comprises a luciferase and the said undesired protein comprises adenylate kinase.

100. (new) A recombinant cell according to claim 98, which further comprises at least one selection marker.

101. (new) A recombinant cell according to claim 98, which comprises a prokaryotic cell.

102. (new) A recombinant cell according to claim 98 which comprises a recombinant E. coli cell.

103. (new) A method for producing a recombinant cell according to claim 98 which method comprises in any order (a) transforming a host cell with a vector which encodes said undesired protein in a form which is denatured under given temperature conditions, subjecting transformants to said temperature conditions and selecting those in which protein product is denatured, and (b) transforming said host cell with a vector which encodes a desired polypeptide which is unaffected under said temperature conditions and a first selection marker, and using the first selection marker to detect stable transformants.

104. (new) A method according to claim 103 wherein the vector which encodes said undesired protein in a form which is denatured under given temperature conditions

further comprises a second selection marker which is different to said first selection marker, and stable transformants are selected.

105. (new) A method according to claim 104 wherein said selection markers comprise particular different antibiotic resistance genes.

106. (new) A method for producing a luciferase which is substantially free of adenylate kinase, the method comprising culturing a host cell which has been transformed so that it expresses a luciferase which is thermostable at 37°C, and expresses adenylate kinase only in a mutant form which form is denatured at temperatures of 37°C; and recovering the luciferase, wherein either the host cell culture or the recovered luciferase is subjected for a sufficient period of time to temperatures at which the adenylate kinase is denatured but the luciferase remains unaffected.